Remarks

Claims 1-3, 6-11, 13, 14, 25, 28-36, and 60-71 are pending in this application. Claims 1-3, 6-11, 13-14, 25, 28-36, and 60-71 stand rejected.

Claims 4-5, 12, 15-24, 26-27, 37-59, and 63 have been previously cancelled.

Claims 60-71 are now cancelled.

New claims 72-83 are presented for examination.

Claim Rejections - 35 U.S.C. §§ 102/103

Claims 60-62 and 64-71 are rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over the journal article by Aslam et al.

Claims 60-71 are cancelled rendering the present rejection moot.

Claims 60-62 and 64-71 are rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over the journal article by Dong et al.

Claims 60-71 are cancelled rendering the present rejection moot.

Claim Rejections - 35 U.S.C. § 103

Claims 1-3, 6-10, 13-14, and 60-69 are rejected under 35 U.S.C. § 103(a) as being unpatentable over the journal article by Wang et al. in view of Fan et al. "Preparation of Cu-Al2O3 nano-composite powders by electroless copper plating."

Applicants request an Examiner Interview to discuss the present rejection.

Claims 60-71 are cancelled rendering the present rejection moot.

Applicants respectfully traverse the present rejection for the following reasons. Independent clams 1 and 25 provide metal oxide nanoparticles that are stabilized by particular ligands. Specifically, claim 1 requires "one or more heteroatom donor ligands bonded to the surface of the nanoparticles, the donor ligands." Moreover, claims 1and 25 require particular ligands - 2,2'-bipyridine, pyrazole, imidazole, triazole, tetrazole, and combinations thereof. The combination of Wang et al. and Fan does not provide metal oxide nanoparticles that are stabilized by 2,2'-bipyridine, pyrazole, imidazole, triazole, tetrazole, and combinations thereof. The December 16, 2009 Office Action (the Office Action) admits that Wang et al. is deficient :

> Wang does not teach the heteroatom donor ligands required by the claims. However, it would have been obvious to one of ordinary skill in the art to modify Wang with Fan because Fan teaches using 2,2-bypridyl (2,2'-bipyridine) as a stabilizer (complexing agent) of metal ions in the production of a fine metal oxide containing powder. See abstract of Fan. The substitution of one known stabilizer/complexing agent for another would have been obvious to one of ordinary skill in the art in order to affect the predictable result of producing nanoparticles.

The Office Action has not properly interpreted the teachings of Fan. Fan does not teach that 2,2-bypridyl (2,2'-bipyridine) is used to stabilize nanosized powder as stated in the Office Action. In particular, Fan does not teach that the **stabilizing agent is bonded to the surface of the nanoparticles** as required by claims 1 and 25. Instead, Fan teaches a process in which 2,2-bypridyl (2,2'-bipyridine) is a **component of a bath composition** for the electroless plating of nano $A1_20_3$. Fan states that 2,2-bipyridyl act as a stabilizer so that "Cu_20 can be reduced effectively" in the electroless plating. The Cu_2O are not the nanoparticles in Fan, it is Al_2O_3 which are the nanoparticles. Fan does not mention or suggest that 2,2-bypridyl (2,2'-bipyridine) interacts with the Al_2O_3. Moreover, the interaction in Fan is most likely on a molecular level with a molecule of 2,2-bypridyl (2,2'-bipyridine) interacting with a molecule of Cu_2O.

Accordingly, for at least these reasons, claims 1-3, 6-10, 13-14, and 60-69 are patentable under 35 U.S.C. § 103(a)over Wang et al. in view of Fan et al.

Claims 1-3, 6-10, 13-14, 25, and 28-36 are rejected under 35 U.S.C. § 103(a) as being unpatentable over the journal article by Dong et al. in view of Fan et al.

Applicants traverse the present rejection for the following reasons. The combination of Dong et al. and Fan does not provide metal oxide nanoparticles that are stabilized by "one or more heteroatom donor ligands bonded to the surface of the nanoparticles, the donor ligands." The Office Action states that:

> Dong teaches using glucose to stabilize copper ions to enable their reduction thus resulting in copper oxide nanoparticles with glucose on the surface thereof.

This characterization of Dong et al. is not correct. Dong et al. does not teach glucose complexing with the surface of a nanoparticle. Instead, Dong et al. teaches that glucose acts by chelating copper ions as depicted in Figure 7 from Dong et al.

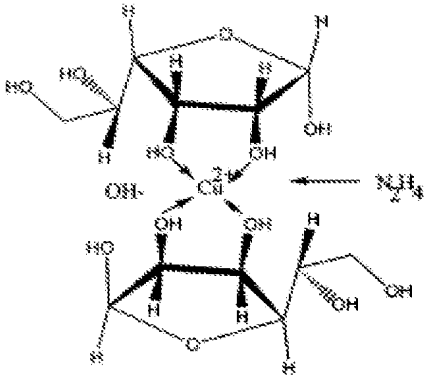

FIG. 7. Schematic figure of the role glucose plays.

Indeed, Dong et al. describes the effects of glucose as follows:

> As depicted in Fig. 7, the hydroxyl ligand of glucose forms a cage that shuts Cu2+ ions in. Small OH- ions can permeate into the cage freely, while it is relatively difficult for the much larger N2H4 molecule to do this.
>
> Dong et al., p. 88-89

Clearly, glucose plays no role in bonding to the surface of a nanoparticle.

Accordingly, claims 1-3, 6-10, 13-14, 25, and 28-36 are allowable under 35 U.S.C. § 103(a) over the journal article by Dong et al. in view of Fan et al.

Conclusion

Applicants have made a genuine effort to respond to each of the Examiner's objections and rejections in advancing the prosecution of this case. Applicants believe that all formal and substantive requirements for patentability have been met and that this case is in condition for allowance, which action is respectfully requested. If any additional issues need to be resolved, the Examiner is invited to contact the undersigned at his earliest convenience.

The Petition fee of $245.00 is being charged to Deposit Account No. 02-3978 via electronic authorization submitted concurrently herewith. The Commissioner is hereby authorized to charge any additional fees or credit any overpayments as a result of the filing of this paper to Deposit Account No. 02-3978.

Respectfully submitted,

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Date: May 17, 2010

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